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I, JANENE PEISKER, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2002953193 for a patent by NICHOLAS BEDFORD as filed on 01 November 2002.

WITNESS my hand this  
Twelfth day of November 2003

JANENE PEISKER  
TEAM LEADER EXAMINATION  
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ORIGINAL

**PROVISIONAL SPECIFICATION FOR AN INVENTION  
ENTITLED**

Invention Title: COOLING HELMET  
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The invention is described in the following statement :

This invention relates to a cooling helmet particularly of a type suited to be worn by sports persons where the helmet will provide impact for protection for the wearer.

## BACKGROUND OF THE INVENTION

5. It has been known to use ice held close to the head of a person to provide cooling for medical purposes.

For instance, it is known to cover the head with a pliable material adapted to hold frozen liquid so that the surface of the head is kept cold. This process is used to reduce damage to hair follicles for those who might be taking cancer drugs where

- 10 they might otherwise lose their hair.

The problem, however, that this invention is directed to is the difficulty associated with sports people where they are obliged to wear a hard impact resistant helmet for protective purposes and, at the same time, may have to stay off side in the sun in temperatures that can be extreme.

- 15 A typical application is a cricketer when batting.

This game is played very often in very hot conditions climate wise.

## BRIEF DISCLOSURE OF THIS INVENTION

- 20 I have discovered that cooling can be usefully and practically achieved without significantly reducing the effective protection provided by such a helmet and without substantial interfering with the ability and action of the player.

In one form of this invention, although this need not necessarily be the only or indeed the broadest form of this, I propose a helmet of a type providing impact resistance where there is included with the helmet means to hold liquid where this can be frozen, from time to time, and provide a cooling effect while thawing.

- 25 A number of difficulties can be relevant to such a proposal.

A first of these is that any liquid, when frozen, will change its volume and will then

also not be subsequently deformable while frozen.

A requirement of any helmet is that its appearance should not be necessarily grossly altered from a conventional appearance.

- 5 To achieve this, any liquid when frozen will preferably have to conform to a dome shape.

- 10 This can either be achieved by having an inner and outer shell defining therebetween one or more cells which hold liquid where the volume of each respective cell in relation to the liquid is such that the liquid can expand when being frozen without causing damage to the retaining or defining walls of a respective shell.

- In a further form, however, there is provided a first shell and above this a second shell leaving therebetween a cavity and there being within the cavity at least one pack, where the said pack comprises at least one pouch containing liquid to be frozen where the pouch is provided by a pliable plastic sheet material.
- 15 In preference, there are a plurality of pouches which are joined by seams which remain flexible whether or not the liquid being held within each respective pouch is frozen or not so that as a whole, the pack can be subjected to freezing and will when located within a cavity between the upper and lower shells can conform to a dome shape even though individual pouches are of themselves inflexible.
- 20 In preference, there is provided an upper shell which includes insulating material which is separably removable from a lower shell where each of the shells is provided by an impact resistant plastics material.
- In preference, the removable pack or packs are filled with a freezing gel which are adapted to be removed from time to time to be frozen separately from the helmet and then relocated within an upper cavity location within the helmet.
- 25 In preference, as previously stated, there is insulation at least along a substantial part of the upper shell so as to restrict heat transfer from above to below such upper shell.

In preference, there are venting holes through the lower shell so that some air which

will from time to time, of course, be cooled will drift into the space defined within the helmet cavity.

- 5 In preference, the upper shell has an outer periphery that engages with relatively close contact, an upper surface of the lower shell so as to provide a relatively smoothly aligned upper outermost surface when the upper shell is in a closed position with respect to the lower shell.

In the alternative, there is a single shell where there is a pack of pouches which are adapted to be held with an engaging contact to an underneath surface of the shell.

- 10 By having the pouches held by pliable plastics material where a joining seam allows for individual frozen pouches to be movable one with respect to the other, even when frozen, allows for the preferable arrangement in which the pack can be removed from time to time and frozen in a substantial planar alignment but then can be returned to within the helmet and conform to the dome shape.

- 15 For a better understanding of this invention it will now be described with relation to one embodiment which shall now be described with the assistance of drawings wherein:

FIG. 1 is an exploded view of a first embodiment,

FIG. 2 is a cross-sectional view also of the same embodiment as in FIG. 1 with also the elements being in an exploded relative position, and

- 20 FIG. 3 is a cross-section of the same embodiment as in FIGS. 1 and 2 where, however, the elements are now in an assembled position.

- Now referring to the Figures, it is to be noted that in Figures 2 and 3, the face protective frame as shown in FIG. 1 is not included in Figures 2 and 3 to assist in keeping the drawings simple but would be expected to be used in most  
25 applications.

This application is specifically a helmet intended for a cricket batsman but it is also to be quite clear that it is considered that this invention will apply to a number of applications including industrial applications, for instance, where hard hats are required on industrial sites as well as other applications where impact resistant

protection is considered useful or vital.

Accordingly, the helmet 1 has a lower shell 2 which is moulded from an appropriate impact resistant plastics material.

- 5 Such plastics material can be selected from several well known types of plastics which may be moulded in polycarbonate plastics as one example.

The lower shell 2 then is comprised of a thin shell of this protective material and includes inner pads such as at 3, 4 and 5 which provide a resilient contact with the head of the wearer and provide a buffer while supporting the position of the helmet 1, nonetheless, softening any impact that is first encountered by the shell 2.

- 10 However, in this case, there is provided an upper shell 6 which is of dome shape and which is adapted to generally conform to the periphery 7 of the lower shell 2 but leave between the two and thereby define a cavity 8.

- 15 This cavity 8 is adapted to receive within it a pack 9 which is provided by two sheets of pliable plastic sheet material 10 and 11 which are welded along seams so as to define thereby a plurality of pouches such as at 12.

Within each respective pouch 12 there is a freezing gel which is adapted to be frozen at colder temperatures typically 0 degrees centigrade or below and which will therefore once frozen, melt and provide thereby cooling effect.

- 20 By having pliable plastics joined and keeping joined the respective pouches 12, means that the seams between these at, for instance, 13 remain pliable and therefore bendable so that even if the pack 9 is frozen in a flat or planar alignment, subsequently, this can then be caused to conform to the dome shape within the upper part of the helmet 1.

- 25 Air holes 14 are located at the outer periphery of the cavity 8 so that they will not be implicitly blocked by being covered by the material of the pack 9 but which also allow the seepage of air therethrough into the central cavity of the helmet 1.

The upper shell 6 is held in position by a bolt 15 embedded within the lower shell 2 at a central location and projecting upwardly so as to pass through aperture 16 and to be held in position by nut 17.

In practice, this arrangement then provides for a very convenient facility in which the upper shell 6 will sit on the lower shell 2 so that the upper shape will look to be very similar to a conventional helmet shape.

- 5 The pack 9 can be removed from time to time and replaced with a further frozen pack so that a person wearing the hat may be able to be kept cool over periods of perhaps a half an hour or even up to an hour in some instances in trials conducted so far.

- 10 It has shown to be of very considerable benefit to those who must use such hard caps for protective purposes but are still therefore subjected to very high temperatures.

While the first embodiment has been shown with the aid of drawings, a second embodiment incorporates a helmet in which the pack as shown at 9 in the first embodiment includes hook and loop fasteners where there are matching hook and loop fasteners on a conventional helmet on an inner surface of the helmet.

- 15 In this way, the pack when frozen can be attached thereto and can be replaced from time to time.

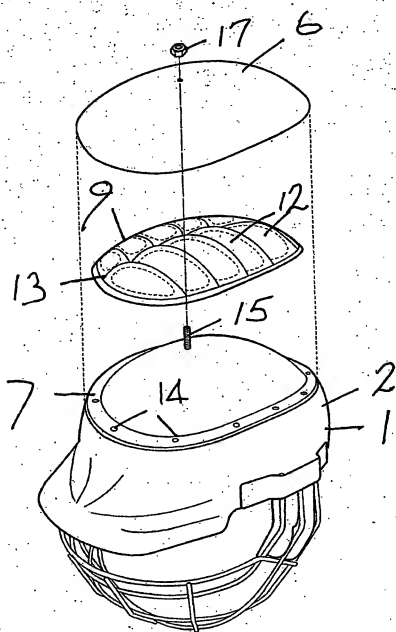
- 20 It is considered that this second embodiment is not as convenient as the first insofar that it is more difficult to control the rate at which the cooling effect is provided but it is achievable insofar that a pack can be frozen as a planar shape and cause to conform to a dome shape by reason of the pliable membranes holding the otherwise frozen liquid.

In relation to the first embodiment, the upper shell 6 is shown as a single thickness but it is also a feature that it can have additional insulation material adhering across a lowermost surface.

- 25 Throughout this specification the purpose has been to illustrate the invention and not to limit this.

Dated this 1<sup>st</sup> day of November 2002

- 30 NICHOLAS BEDFORD  
By his Patent Attorneys  
COLLISON & CO.



**Fig 1**



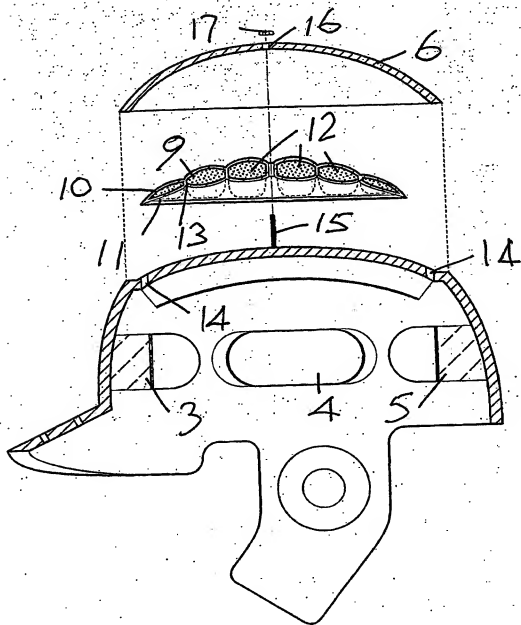
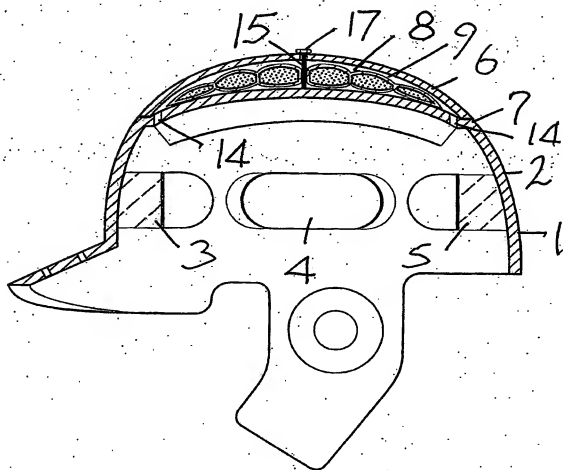


Fig 2



**Fig 3**

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